California Air Resources Board
Planning and Technical Support Division
Air Quality Analysis Section

California Air Resources Board's 2010 Monitoring Network Assessment Report

Prepared for:
U.S. EPA Region 9
75 Hawthorne Street
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Executive Summary

This report provides a summary assessment of the ambient air quality monitoring network in certain regions of California. Federal regulations require air quality agencies to conduct a comprehensive assessment every five years, beginning in 2010, and forward a report summarizing the findings to the U.S. Environmental Protection Agency (U.S. EPA). This document comprises the first report, due July 1, 2010.

The purpose of the assessment is to determine if the network achieves the monitoring objectives specified in federal regulations for pollutants with federal ambient air quality standards. These pollutants include ozone, PM10, PM2.5, carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), and lead. The regulations require an assessment of whether existing monitoring sites are sufficient. They also require an evaluation of any needed changes to PM2.5 population-oriented sites. In addition to the federal requirements, this report also provides an evaluation of key needs for implementing California ambient air quality standards and program requirements.

California has the most severe air quality problem in the nation. Over time, California's monitoring network has expanded to meet the increasing challenges of implementing air quality programs to achieve healthy air. The current monitoring network exceeds minimum federal requirements. Areas that violate or are close to violating the new ozone and PM2.5 standards now include most of the rural counties in northern California and in some instances, even more remote locations near national parks. Therefore, our fundamental conclusion is that as federal air quality standards for ozone and PM2.5 have become increasingly more stringent in recent years, monitoring at the sites covered by this report is critical for determining compliance with the new standards. Moreover, monitoring discussed in this report is also needed for State designation purposes and other State and local monitoring programs.

Monitoring is a shared responsibility between local air districts and the Air Resources Board (ARB). The areas covered by this report are shown in Table 1. They include all or some of the counties in seven different air basins. These counties span the most rural and sparsely populated counties in northern California.

Areas not included in Table 1, which include all of California's larger districts, as well as many of the State's smaller districts, are preparing their own network assessments. The districts expected to submit their individual network assessments to Region 9 include: San Francisco Bay Area, South Coast, San Joaquin Valley, San Luis Obispo County, Ventura County, Monterey Bay Unified, Santa Barbara County, Great Basin Unified, San Diego County, Sacramento Metropolitan, North Coast Unified, Mojave Desert, and Imperial County.

Table 1. Areas covered in this report.

Air Basin	County (or portions of County)	Air District
Lake County	Lake	Lake County AQMD
Lake Tahoe	El Dorado (partial)	El Dorado County AQMD
	Placer (partial)	Placer County APCD
Mojave Desert (partial)	Kern (partial)	Eastern Kern APCD
Mountian Counties	Amador	Amador County APCD
	Calaveras	Calaveras County APCD
	El Dorado (partial)	El Dorado County AQMD
	Mariposa	Mariposa County APCD
	Nevada	Northern Sierra AQMD
	Placer (partial)	Placer County APCD
	Plumas	Northern Sierra AQMD
	Sierra	Northern Sierra AQMD
	Tuolumne	Tuolumne County APCD
North Coast	Mendocino	Mendocino County AQMD
	Sonoma (partial)	Northern Sonoma County APCD
Northeast Plateau	Lassen	Lassen County AQMD
	Modoc	Modoc County APCD
	Siskiyou	Siskiyou County APCD
Sacramento Valley	Butte	Butte County AQMD
	Colusa	Colusa County APCD
	Glenn	Glenn County APCD
	Placer (partial)	Placer County APCD
	Shasta	Shasta County AQMD
	Solano (partial)	Yolo-Solano AQMD
	Sutter	Feather River AQMD
	Tehama	Tehama County APCD
	Yolo	Yolo-Solano AQMD
	Yuba	Feather River AQMD

Note:
AQMD = Air Quality Management District
APCD = Air Pollution Control District

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Introduction

The United States Environmental Protection Agency (U.S. EPA) finalized amendments to federal monitoring regulations in 2006. These amendments included requirements for air quality monitoring agencies to prepare an annual monitoring network plan and to conduct a comprehensive assessment of its monitoring network every five years. Both the 2010 annual monitoring network plan and the five year network assessment report are due on July 1, 2010 to the U.S. EPA. This report summarizes the results of the network assessment.

The primary requirements for the assessment report are to determine if:

- The monitoring network (network) is meeting the monitoring objectives of Appendix D in 40 CFR Part 58;
- Existing sites are no longer needed and can be terminated;
- New sites and technologies are appropriate; and if
- Any changes are needed to the PM2.5 population oriented sites.

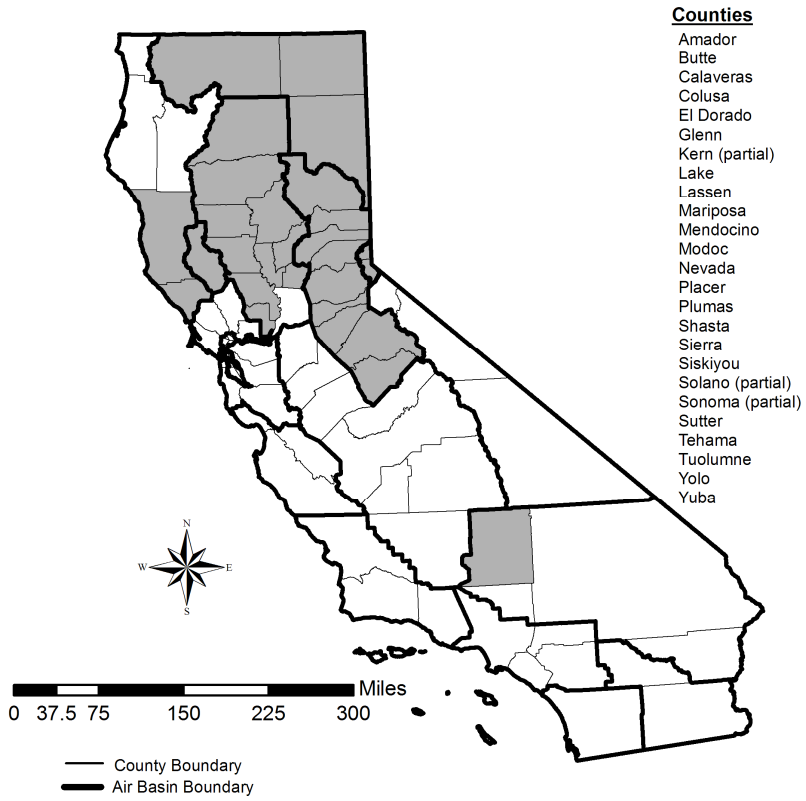
California has one of the most extensive monitoring networks in the country. Monitoring is routinely conducted at over 250 locations. Monitoring is a joint responsibility between air districts, the Air Resources Board (ARB), and other agencies including the National Park Service. Because of the severity of California's air quality problems, the number of monitors exceeds minimum federal requirements but is critical to implementing programs to attain federal and State ambient air quality standards.

The assessment is required to cover all pollutants for which the U.S. EPA has established health based air quality standards. These pollutants are ozone (O3), PM2.5, PM10, carbon monoxide (CO), sulfur dioxide (SO2), nitrogen dioxide (NO2) and lead. This report focuses on the most critical pollutants. Ozone and PM2.5 represent California's most severe air quality problems and have the greatest public health impacts. None of the areas in this report currently monitor for SO2 or lead. New federal NO2, SO2 and lead monitoring requirements will be covered in the 2011 or 2012 annual network report.

Separately, thirteen districts, including the largest districts in California, have elected to conduct their own assessment. In some districts, the network also includes monitors operated by ARB or the National Park Service. Districts that have decided to assess their own monitoring network are also responsible for assessing all ARB monitoring sites that are located within the district's jurisdiction. The network assessment summarized in this report covers the same geographical area covered in the 2010 annual network plan and includes the following areas: Lake County Air Basin, Lake Tahoe Air Basin, the eastern Kern

County portion of the Mojave Desert Air Basin, Mountain Counties Air Basin, a portion of the North Coast Air Basin, Northeast Plateau Air Basin, and the Sacramento Valley Air Basin (minus the sites operated by the Sacramento Metropolitan Air Quality Management District). The map illustrates the areas covered by this assessment.

Figure 1
Counties and portions of counties covered in this report



Network Monitoring Objectives

Federal regulations specify the monitoring objectives that should be supported for each pollutant by monitors that are part of the State and Local Air Monitoring Stations (SLAMS) network. Note that there are no SO2 or lead monitors operating within the geographic scope of this report. As previously noted, this report is limited to a number of ARB, air district and National Park operated sites within the smaller air districts in northern California and one in southern California. The ARB assessment includes a site-by-site, monitor-by-monitor evaluation.

One of the most important monitoring objectives is to determine compliance with State and federal air quality standards. As federal standards have become more

stringent recently, having sufficient monitoring to meet this objective is even more critical. Many smaller, primarily rural counties have ozone and PM2.5 air quality that approaches or exceeds these new more stringent standards. Other monitoring objectives are also important. Below is a selected summary of typical monitoring objectives.

- Establish compliance with State and federal air quality standards
- Monitor sites with expected high concentrations
- Understand historical trends and progress made towards standards
- Track spatial distribution of air pollutants
- Evaluate population exposure to air pollutants and have information to inform the public about air quality (AQI)
- Characterize specific geographic locations and emissions sources
- Provide air quality data for air quality models and emission inventory development
- Provide air quality data for determining burn days for agricultural and prescribed burning
- Determine relationship between sources and resulting air quality (Source-apportionment).
- Characterize the extent of pollutant transport.

Approach

This assessment is organized by air basin. An air basin generally has similar meteorological and geographical conditions throughout with similar air mass. California is divided into 15 air basins to better manage air pollution. We used this approach in the assessment because a network of monitoring sites within an air basin would likely serve similar monitoring objectives. It should be noted that several counties are located in more than one air basin and the discussion of the monitors is broken out by air basin.

Within each air basin, we conducted an evaluation for each monitoring site. We considered a number of sources of information including applicable federal and State requirements, current air quality conditions and attainment status, population, topography and climate. The overall goal was to determine how effectively each site is meeting critical monitoring objectives. Throughout the assessment, we provide 2009 ozone and PM2.5 federal design values for many sites. However it should be noted that, in some instances, these design values may include data for potential exceptional events.

Federal Monitoring Requirements

U.S. EPA regulations specify the minimum number of sites at which State and local air agencies must deploy monitors. In practice, the State and local agencies find they need to deploy significantly more monitors to fulfill State and

local monitoring objectives, as well as federal objectives. Requirements for the minimum numbers of monitors appear in Appendix D of Part 58 of the CFR. For ozone, PM2.5, and PM10, the required minimum number is based on the population of an area and the severity of the air quality for the pollutant in the area. For CO and lead, no current monitoring is required by Appendix D unless an area exceeds or is close to exceeding a national ambient air quality standard, which is true for very few if any areas in the U.S. New federal monitoring requirements for NO2 and SO2 will be discussed in future annual monitoring network plans. For purposes of the minimum requirements, the areas are defined by the metropolitan statistical areas (MSA) developed by the Office of Management and Budget. An MSA may include one or more counties. However, not all counties are within an MSA.

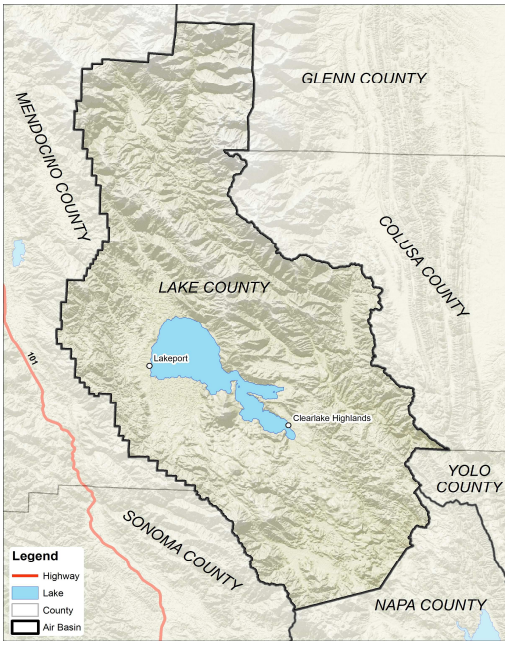
All areas in this report meet or exceed federal requirements. However, additional monitoring is often needed to implement State and local programs designed to attain State air quality standards as expediously as possible. A summary of the numbers of required and existing monitoring sites in the geographical scope of this report can be found in Appendix A, located at the end of this report.

Summary of Assessment

California's extensive network of monitors is needed due to our severe air quality issues, large population and vehicle miles traveled, varied topography, large number of separate airsheds, and ozone and PM2.5 concentrations that are significantly higher than the rest of the country. As a result of this assessment, all existing monitors are critical and none are proposed to be discontinued or relocated. Under current federal regulations, no additional monitors are required in the geographic scope of this report. Any new federal monitoring requirements that take effect later in the year or in the next few years will be addressed in future annual monitoring network plans. Furthermore, this assessment demonstrates that the monitors and sites within this report meet the monitoring requirements of Appendix D in 40 CFR 58. At the time that this report was drafted no additional monitoring is under consideration.

Lake County Air Basin

Lake County is the only county in the Lake County Air Basin (Basin). It is a rural county located in northern California and borders Napa, Sonoma, Mendocino, Glenn and Colusa counties. It has a population of 65,000, covers 1,327 square miles and includes the towns of Lakeport and Clearlake.



There is one (each) ozone, PM10, and PM2.5 monitor at Lakeport that is part of the State and Local Air Monitoring Stations (SLAMS) network and two PM10 monitors used in the Geyser Air Monitoring Program (GAMP). Lake County has long attained State and federal air quality standards and has some of the best air quality in the State. In 2009, there were no violations of State or federal ozone, PM10, or PM2.5 standards in the Basin.

However, the 2009 federal 8-hour ozone design value of 0.062 ppm is within the range proposed by U.S. EPA for the revised federal ozone standard (to be finalized in August 2010). As federal standards become increasingly stringent over time, monitoring is critical for determining whether an area complies with revised federal standards. Continued ozone, PM10 and PM2.5 monitoring is also needed for State designations. As shown below, the monitoring objectives in Lake County are to measure high concentrations needed to make designation determinations. Because the current sites in Lake County are located where the highest concentrations are expected to occur and there are no minimum federal requirements, no additional monitoring is needed. No changes to the monitoring network for Lake County are being considered at this time.

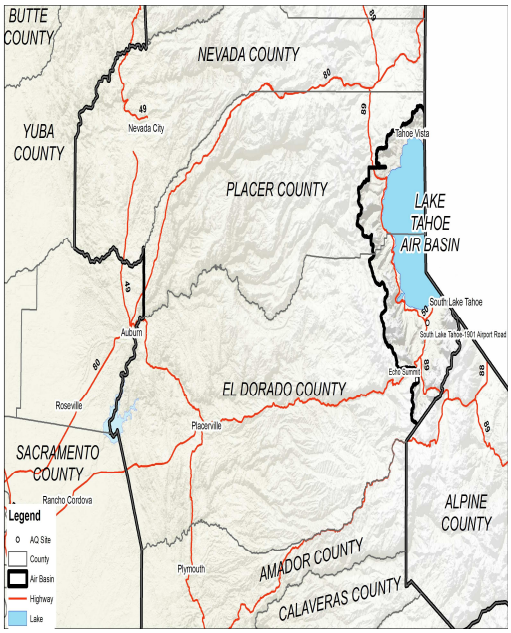
Lake County Air Basin: Lake County							
	O_3	CO	NO_2	$PM_{2.5}$	PM_{10}	cont. $PM_{2.5}$	cont. PM_{10}
Lakeport (060333001)	StateD, Gnrl			StateD, Gnrl	StateD, Gnrl		
Middletown (060333010)					StateD, Gamp		
Glenbrook (060333011)					StateD, Gamp		

Note: None of the areas discussed in this report have monitors for SO_2 or lead. Moreover, listed design values in this report may include data for potential exceptional events.

Monitoring Objectives:
Hconc = expected high concentration site
Rconc = representative concentration site
Simp = local emission source
Bkgrnd = background levels
StateD = attainment of State standards
Trends = trends analysis
Trans = pollutant transport
AgBn = agriculture burning programs
PopEx = population exposure to pollutant
Gamp = Geyser Air Monitoring Program
Gnrl = general (i.e., public reporting, spatial representation)

Lake Tahoe Air Basin (portions of El Dorado and Placer counties)

The Lake Tahoe Air Basin (Basin) is the smallest air basin in California. It covers approximately 224 square miles and has an estimated population of 58,121 (2010). Part of the Basin is in the State of Nevada, and part in California. The part that lies in California comprises the eastern part of El Dorado and Placer counties and includes the cities of South Lake Tahoe, Tahoe City and Tahoe Vista. Major U.S. Highway 50 runs through the City of South Lake Tahoe.



There is one ozone monitor at the South Lake Tahoe-Airport site located in El Dorado County and it is a seasonal monitor that operates May through October. Although there is no current ozone monitor in the Placer County portion of the Basin, the South Lake Tahoe-Airport site is considered representative of the entire Basin. The area violates the State ozone standard and had one exceedance day in 2009. The 2009 federal 8-hour design value of 0.068 ppm is within the range proposed by U.S. EPA for the revised 8-hour federal ozone standard. The South Lake Tahoe-Airport site is needed for State and federal designations.

The continuous PM10 monitor at the South Lake Tahoe-Sandy Way site is used for public reporting and spatial representation as well as for State designation purposes. The area violates the State 24-hour PM10 standard and had one State exceedance day in 2009. The Basin is currently nonattainment for the State PM10 standard. This site is the only PM10 site in the Basin. For these reasons, the PM10 monitor is also needed.

The current sites in the El Dorado County portion of the Basin are part of the Sacramento-Arden-Arcade-Roseville MSA and are located where the highest concentrations are expected to occur. No additional monitoring is required in the MSA and no changes to the monitoring network in the Basin are being considered at this time.

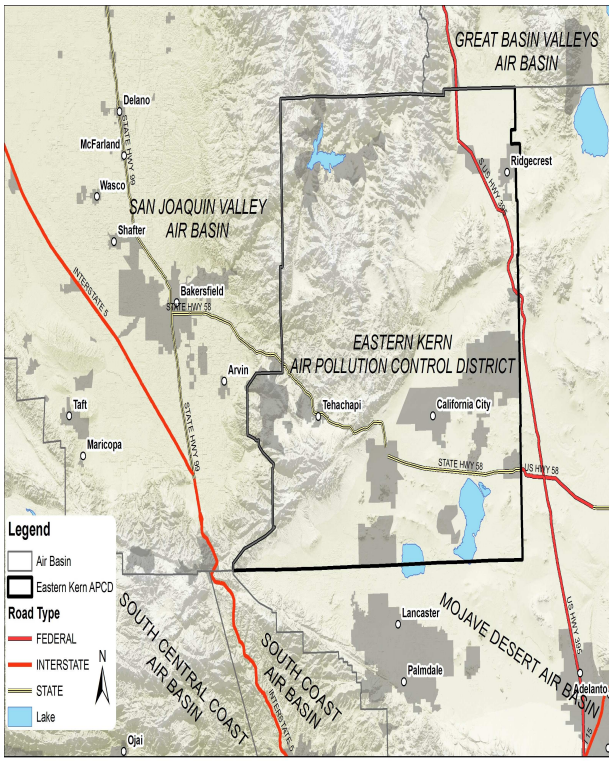
Lake Tahoe Air Basin: Portions of El Dorado and Placer Counties							
	O_3	CO	NO_2	$PM_{2.5}$	PM_{10}	cont. $PM_{2.5}$	cont. PM_{10}
South Lake Tahoe-Airport (060170013)	StateD, Trans, Hconc						
South Lake Tahoe-Sandy Way (060170011)							Grnl

Eastern Kern Air Pollution Control District (a portion of the Mojave Desert Air Basin)

This section covers the monitoring sites located in the Eastern Kern Air Pollution Control District (District). The District comprises the eastern portion of Kern County and is one of three districts located in the Mojave Desert Air Basin (Basin). The other two districts in the Basin will be included in a separate assessment prepared by the Mojave Desert Air Quality Management District.

The District is located in the northwestern corner of the Basin and separated, to the south, from the South Coast Air Basin by the Antelope Valley and San Gabriel Mountains. The Tehachapi and the Sierra Nevada Mountains separate it from the San Joaquin Valley, to the west and north. Directly to the east is San Bernardino County. Eastern Kern's population of 147,758 (2010) resides primarily in and around the major towns, including Tehachapi, Rosamond, Boron and Mojave. Major highways are U.S. Highways 58, 14, and 395.

The ozone monitor at the Mojave-Poole site is the only ozone monitor in the District. In 2009, 32 days and 61 days exceeded the federal and State 8-hour ozone standards, respectively. The 2009 federal 8-hour ozone design value of 0.084 ppm is well above the level proposed by U.S. EPA for the revised 8-hour federal ozone standard. This site is critical for both federal and State ozone designation purposes.



The PM2.5 monitors at the Mojave-Poole Street and Ridgecrest-California Street sites are used for collecting data at expected high and representative concentration sites. The District is designated as an unclassified area for both State and federal PM2.5 standards. Federal 2009 PM2.5 annual average and 24-hour design values for the District are 6.1 ug/m^3 and 16 ug/m^3, respectively. As federal and State PM standards become increasingly more stringent, monitoring becomes more critical for demonstrating whether an area complies with these revised standards.

The PM10 monitors at the Mojave-Poole Street and Ridgecrest-California Street sites are used for collecting data at expected high and representative

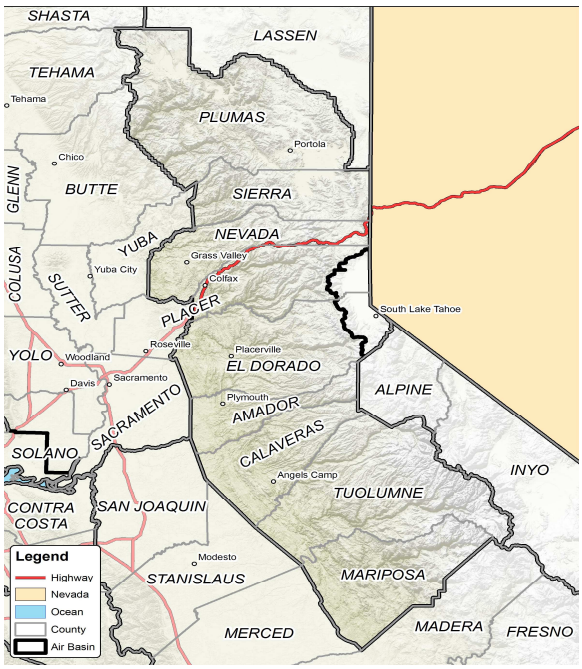
concentration sites. The Canebrake site started on January 1, 2009 and is used for monitoring regional PM10 concentration levels in the area and for demonstrating compliance with the federal standard. This portion of eastern Kern County is currently a nonattainment area for PM10. For these reasons, continued PM10 monitoring is needed in the District. Note that the District recently started ozone and meteorological monitoring at Tehachapi for the evaluation of transport. However, there are no data reported from this site into the Environmental Protection Agency's Air Quality System (AQS) at the time this report was drafted.

The current sites in the District are part of the Bakersfield MSA and the majority of sites are located where the highest concentrations are expected to occur. No additional monitoring is required in the MSA and no changes to the monitoring network in the District are being considered at this time.

Mojave Desert Air Basin: Eastern part of Kern County							
	O_3	**CO**	**NO_2**	**$PM_{2.5}$**	**PM_{10}**	**cont. $PM_{2.5}$**	**cont. PM_{10}**
Canebrake (060290017)					Rconc		
Mojave-Poole (060290011)	Hconc, Trans			Hconc	Hconc		
Ridgecrest-West California (060290015)				Rconc	Hconc		

Mountain Counties Air Basin

The Mountain Counties Air Basin (Basin) extends from Plumas County in the north to Mariposa County in the south, and also includes all of Sierra, Nevada, Amador, Calaveras, Tuolumne, and Mariposa counties, and portions of Placer and El Dorado counties. The Basin covers the central and northern parts of the Sierra Nevada Mountains. The elevation ranges from several hundred feet in the foothills along the western edge of the Basin to more than 10,000 feet along the Sierra crest. Although bordering the Sacramento urban area to the west, the Basin is predominately rural, with a total population of 472,991 (2010).



Despite its rural character, the Basin includes all or part of four nonattainment areas for the federal 1997 ozone standard. Three nonattainment areas are completely contained within the Basin: Central Mountain Counties (Amador and Calaveras counties), Southern Mountain Counties (Tuolumne and Mariposa counties), and Western Nevada County (a portion of Nevada County). Furthermore, El Dorado and Placer counties have long been part of the Sacramento Metro ozone nonattainment area because they are linked to the Sacramento urban area through travel, employment and housing patterns.

Most of the Basin is either attainment or unclassifiable for the federal 2006 24-hour PM2.5 standard. A portion of El Dorado County is included in the Sacramento PM2.5 nonattainment area. (A portion of the Placer County is also included in the nonattainment area, but this portion lies in the Sacramento Valley rather than Mountain Counties Air Basin.)

There are a variety of monitoring objectives in the Basin. These objectives include collecting data at expected high concentration sites, providing data for agriculture burn decisions, evaluation of ozone transport and for educating the public about air quality. Some sites also collect representative and background concentration data. All of the monitors in the Basin provide data to implement a variety of federal and State programs. We did not identify any new or unmet monitoring needs.

The current sites in the El Dorado and Placer counties portion of the Basin are part of the Sacramento-Arden-Arcade-Roseville MSA. No other counties in the Basin are part of an MSA. No additional monitoring is required in the MSA or in any part of the Basin and no changes to the monitoring network in the Basin are being considered at this time. A summary of the monitors and their objectives accompanies each of the tables below.

Nevada, Plumas, and Sierra counties

There are more PM2.5 than ozone monitors in this northernmost part of the Basin. These monitors provide data for general uses, designation purposes, and to help assess potential wood smoke impacts and are located at potentially high concentration sites. In addition, the Plumas County 2009 PM2.5 design value is near the daily federal PM2.5 standard. The Grass Valley site is the most comprehensive, and includes monitors for O3, NO2, and PM2.5. Nevada County is nonattainment for the federal ozone standard and had a 2009 8-hour ozone design value of 0.087 ppm with 18 federal exceedance days in 2009. The White Cloud Mountain site is operated by the ARB and helps characterize air quality in the eastern portion of the ozone nonattainment area. Ozone concentrations at this site also violate the current federal and State ozone standards. Ozone monitoring at Truckee restarted on July 1, 2010 and the data will be submitted into AQS. Ozone monitoring in Penn Valley in Nevada County and PM10 monitoring in Loyalton in Sierra County are not reporting data into AQS. These non-AQS monitors are used for local monitoring purposes.

Mountain Counties Air Basin: Nevada, Plumas and Sierra Counties							
	O_3	CO	NO_2	$PM_{2.5}$	PM_{10}	cont. $PM_{2.5}$	cont. PM_{10}
Chester (060631007)						StateD, Gnrl	
Grass Valley (060570005)	Hconc, Rconc, StateD		Rconc, StateD	Rconc		StateD, Gnrl	
Portola (060631009)				Hconc		StateD, Gnrl	
Quincy (060631006)				Hconc		StateD, Gnrl	
Truckee (060571001)	Hconc			Hconc		StateD, Gnrl	
White Cloud Mountain (060570007)	StateD						

El Dorado and Placer counties

El Dorado and Placer counties both split their land area among one or more air basins. A part of the El Dorado County is also in the Lake Tahoe Air Basin and Placer County is split into three air basins (Lake Tahoe, Mountain Counties, and Sacramento Valley). The Mountain Counties Air Basin portions of El Dorado and Placer counties are part of the Sacramento Metro nonattainment area for the federal 1997 ozone standard. Consequently, identifying areas of high ozone concentration is the primary monitoring objective within this part of the Basin. Cool has been the high ozone site during several different ozone seasons and had a 2009 federal 8-hour ozone design value of 0.093 ppm. Echo Summit was established to characterize the extent of air pollutant transport from the Sacramento and San Joaquin Valleys up the western slope of the Sierra Nevada. This area is currently nonattainment for the State 24-hour PM10 standard. For these reasons, continued ozone and PM10 monitoring in El Dorado and Placer counties is needed.

Mountain Counties Air Basin: Portions of El Dorado and Placer Counties							
	O_3	CO	NO_2	$PM_{2.5}$	PM_{10}	cont. $PM_{2.5}$	cont. PM_{10}
Colfax (060610004)	Hconc, StateD						
Cool-Hwy 193 (060170020)	Hconc, Trans, StateD						
Echo Summit (060170012)	Hconc, Trans						
Placerville-Gold Nugget (060170010)	Hconc, Trans				Hconc		

Amador and Calaveras counties

Amador and Calaveras counties comprise the Central Mountain counties nonattainment area for the federal 1997 ozone standard. Two ozone monitors track the area's progress toward attaining the standard. The San Andreas site is the 2009 federal design site for the federal 8-hour ozone nonattainment area and

had a 2009 federal 8-hour ozone design value of 0.082 ppm. Though neither county is part of a federal PM2.5 or PM10 nonattainment area, the monitors in San Andreas help us understand representative concentrations in that area and are used for State designation purposes.

Mountain Counties Air Basin: Amador and Calaveras Counties							
	O_3	CO	NO_2	$PM_{2.5}$	PM_{10}	cont. $PM_{2.5}$	cont. PM_{10}
Jackson-Clinton Road (060050002)	Hconc, Trans, StateD						
San Andreas (060090001)	Hconc, Trans, StateD			Rconc	Rconc		

Mariposa and Tuolumne counties

Mariposa and Tuolumne counties comprise the Southern Mountain counties nonattainment area for the federal 1997 ozone standard. They also violate the State ozone standards. The area had a 2009 federal 8-hour ozone design value of 0.086 ppm with more than 10 days in 2009 that exceeded the federal ozone standard. The ozone sites are critical in determining compliance with federal and State ozone standards. The ozone monitor at the Yosemite-Turtleback site is operated by the National Park Service. The Sonora and Yosemite-Turtleback sites are the 2009 federal ozone design sites in the southern portion of the Basin.

While there were no days that exceeded the federal 24-hour PM10 standard in 2009, three days exceeded the State 24-hour PM10 standard. A portion of Mariposa County is nonattainment for the State PM10 standard. This area is unclassifiable for both federal and State PM2.5 standards. The continuous PM2.5 monitor at the Yosemite Village site is used for State designation purposes as well as public reporting, smoke monitoring and spatial representation. For these reasons, continued PM2.5 and PM10 monitoring is needed at the Yosemite Village site, which is operated by ARB.

Mountain Counties Air Basin: Mariposa and Tuolumne Counties							
	O_3	CO	NO_2	$PM_{2.5}$	PM_{10}	cont. $PM_{2.5}$	cont. PM_{10}
Jerseydale (060430006)	Hconc, Trans						
Sonora (061090005)	Hconc, StateD						
Yosemite-Turtleback (060430003)	Hconc, Trans, StateD						
Yosemite Village (060431001)					Hconc	StateD, Gnrl	

Mendocino County Air Quality Management District and Northern Sonoma Air Quality Management District (a portion of the North Coast Air Basin)

This section covers monitoring in the Mendocino County Air Quality Management District and the Northern Sonoma Air Quality Management District. These two districts cover the entire portion of Mendocino County and the portion of Sonoma County located in the North Coast Air Basin (Basin). The other three counties in the Basin are covered in a separate assessment report prepared by the North Coast Unified Air Quality Management District (Humboldt, Del Norte, and Trinity).

Stretching along the northern coastline of California, the Basin covers 12,339 square miles and is home to giant coastal redwood trees that are found nowhere else in the world. The Mendocino, Humboldt, Trinity, Del Norte, and northern part of Sonoma counties lies within the Basin boundary, which borders the State of Oregon directly to the north, the Sacramento Valley and Northeast Plateau air basins to the west, and the San Francisco Air Basin to the south. The Basin's population of 333,829 (2010) resides primarily in and around major towns, including Crescent City, Eureka, Fort Bragg, Ukiah, Willits, and Healdsburg. Major highways are U.S. Highways 101 and 1.

While the current sites in the Mendocino County Air Quality Management District are not part of an MSA, the current sites in the Northern Sonoma Air Quality Management District are part of the Santa Rosa-Petaluma MSA. The majority of sites in both districts are located where the highest concentrations are expected to occur. No additional monitoring is required in the MSA and no changes to the monitoring network in the districts are being considered at this time.

Mendocino County Air Quality Management District

There is only one ozone monitor in Mendocino County, at Ukiah-Gobbi Street. Ozone monitoring at the Willits-Main Street site was suspended in 2008. Ozone concentrations at the Willits-Main Street site were lower than ozone concentrations at the Ukiah-Gobbi Street site and were below the range of the proposed federal ozone standard. However, the 2009 federal 8-hour design value of 0.062 ppm at Ukiah-Gobbi Street is within the range proposed by U.S.

EPA for the revised 8-hour federal ozone standard. For this reason, continued ozone monitoring is critical at the Ukiah-Gobbi Street site.

PM2.5 and PM10 monitoring in Mendocino County are mainly used for collecting data at expected high and representative concentration sites. The District discontinued three filter-based PM10 monitors and one filter-based PM2.5 monitor in 2008 and started two continuous PM2.5 FEMs and one continuous PM10 FEM monitor in 2009. Data from the continuous PM2.5 and PM10 monitors are reported into AQS. Due to the recent establishment of the continuous FEM PM monitors in the county, continued PM monitoring is needed to have more completed data for regulatory purposes, including State designations. Mendocino County is currently nonattainment for the State 24-hour PM10 standard.

Carbon monoxide monitors at the Ukiah-Gobbi Street and Willits-Main Street sites were discontinued in 2008, along with the nitrogen dioxide (NO2) monitor at Willits-Main Street in Mendocino County. Carbon monoxide concentrations in the District were well below both federal and State standards. Currently, there is only one NO2 monitor left operating in Mendocino County, which is located at the Ukiah-Gobbi Street site. The NO2 monitor provides useful information on ozone precursors and for evaluating transport. Further evaluation of NO2 monitoring needs will be discussed in the 2012 annual network report.

Northern Sonoma Air Quality Management District

One ozone monitor exists in the northern part of Sonoma County that lies within the North Coast Air Basin. This portion of the county comprises the Northern Sonoma County Air Quality Management District (District). This District attains State and federal ozone standards. The 2009 federal 8-hour ozone design value is 0.056 ppm. The ozone monitoring site is the only ozone monitor in the county and is needed for determining compliance with State and federal standards. The ozone monitor is also needed to characterize transport. For these reasons, continued ozone monitoring is needed at the Healdsburg-Airport site.

Currently, there are three PM10 monitoring sites in the District. The District had expressed interest in discontinuing all filter-based PM10 monitoring and establishing continuous PM10 monitoring. The ARB is coordinating with the District in this effort. This area had attained the State PM10 standard and is listed as unclassified under federal standards; however, continued PM10 monitoring is needed in the area to maintain State compliance.

North Coast Air Basin: Mendocino County and the northern part of Sonoma County							
	O_3	CO	NO_2	$PM_{2.5}$	PM_{10}	cont. $PM_{2.5}$	cont. PM_{10}
Cloverdale (060970001)					Rconc		
Fort Bragg (060450002)							Hconc, StateD
Guerneville (060973002)					Rconc		
Healdsburg-Airport (060971003)	Rconc, StateD						
Healdsburg-Matheson (060970002)					Rconc		
Ukiah-County Library (060450006)						Hconc, StateD	
Ukiah-Gobbi Street (060450008)	Hconc, Trans, StateD	Rconc	Rconc				
Willits-Firehouse (060452001)						Hconc, StateD	

Northeast Plateau Air Basin

The Northeast Plateau Air Basin (Basin) is located in the remote northeast corner of California and comprises Lassen, Modoc, and Siskiyou counties. The northern part of the Basin has lofty volcanic peaks, such as Mount Shasta and Mount Lassen. To the south and west, forested mountains dominate the Basin. The Basin covers approximately 14,788 square miles and is bordered by the states of Oregon directly to the north and Nevada to the east. The Basin's population of 92,112 (2010) predominately resides in rural towns, including Yreka, Mount Shasta, Alturas, and Susanville. Major highways are U.S. Highways 5, 97, and 395.

While there are three monitoring sites in Siskiyou County, there are no monitoring sites in Lassen and Modoc counties. Lassen and Modoc counties have long attained the federal and State ozone standards. The City of Yreka, located in Siskiyou County, is the largest populated area in the Basin and represents an area of expected high concentrations within the Basin. For this reason, ARB believes that Siskiyou County adequately represents the entire Basin. This section describes the monitoring objectives for the ozone, PM10, and PM2.5 monitors in Siskiyou County.

There is only one ozone monitor located at Yreka in Siskiyou County. Siskiyou County is currently designated nonattainment-transitional for the State ozone standard. Siskiyou County has made dramatic progress towards attainment of the State ozone standard. In 2009, no days exceeded either the federal or State 8-hour ozone standard at the site. However, the 2009 federal 8-hour ozone design value of 0.061 ppm is within the range proposed by U.S EPA for the revised 8-hour federal ozone standard. This site is needed for determining compliance with State and federal ozone standards. For this reason, continued ozone monitoring at the Yreka site is needed.

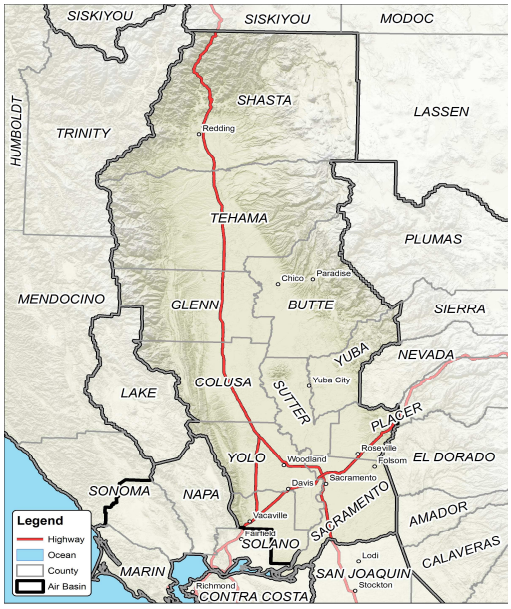
There are three PM10 monitoring sites in Siskiyou County. While the Yreka and Mount Shasta sites are operated by the District, the Lava Beds National Monument site is operated by the National Park Service. The area had attained the federal 24-hour PM10 standard, however, PM10 concentrations in the last three years exceeded the State 24-hour PM10 standard. Continued PM10 monitoring is needed for State designation purposes.

In 2007, the PM2.5 monitor at the Yreka site was inoperable and no data were reported in that year. The PM2.5 monitor was reestablished at the site in 2008 and two years of PM2.5 data were reported into AQS. While PM2.5 concentrations in the area are below both federal and State PM2.5 standards, continued monitoring of the PM2.5 monitor is needed to have more complete data for designation purposes. Because the majority of sites in Siskiyou County are located where the highest concentrations are expected to occur and there are no minimum federal requirements, no additional monitoring is needed and no changes are being proposed to the monitoring listed below.

Northeast Plateau Air Basin: Siskiyou County							
	O_3	**CO**	**NO_2**	**$PM_{2.5}$**	**PM_{10}**	**cont. $PM_{2.5}$**	**cont. PM_{10}**
Lave Beds (060930005)					Hconc		
Mount Shasta (060930004)					Rconc		
Yreka (060932001)	Hconc, Trans, StateD			Hconc	Hconc		

Sacramento Valley Air Basin

The Sacramento Valley Air Basin (Basin) comprises the Sacramento urban area in the south and stretches northward for more than 150 miles. The Basin includes nine complete counties—Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba—and portions of two others—Solano and Placer. The Basin is a valley, ringed on three sides by significant mountain ranges—the California Coastal Range to the west, the Sierra Nevada Mountains to the east, and the Cascade Range to the north.



The Basin is home to more than 2.5 million people, the majority of whom live in the Sacramento Metro ozone nonattainment area portion of the Basin. The rest are scattered among smaller cities to the north (Yuba City, Marysville, Chico, and Redding) as well as smaller towns and communities.

There are multiple air quality concerns in this region. Butte, Sacramento, Yolo and the portions of Placer and Solano counties located in the Basin are currently designated nonattainment for federal and State ozone standards. Most of the other counties have federal 8-hour ozone design values within the range proposed for the revised 8-hour federal ozone standard and violated the State ozone standard. While most of the counties (excluding Butte and Sacramento) either had attained or are unclassifiable for the State PM2.5 standard, several areas in the Basin are nonattainment for the federal PM2.5 standard. All counties in the Basin are designated nonattainment for the State PM10 standard.

The Basin includes five MSAs: Chico, Redding, Sacramento-Arden-Arcade-Roseville, Vallejo-Fairfield, and Yuba City. No other counties in the Basin are part of an MSA. There are a variety of monitoring objectives in the Basin. These objectives include collecting data at expected high concentration sites, providing data for agriculture burn decisions, evaluation of ozone transport and for educating the public about air quality. Some sites also collect representative and background concentration data. All of the monitors in the Basin provide data to implement a variety of federal and State programs. We did not identify any new or unmet monitoring needs.

No additional monitoring is required in the MSA or in any part of the Basin and no changes to the monitoring network in the Basin are being considered at this time. Specific monitors and monitoring objectives are described below. The Sacramento Metropolitan Air Quality Management District is conducting their own

assessment; therefore, monitors located in Sacramento County are not discussed in this report.

Shasta County

Shasta County has a mix of ozone and PM2.5 and PM10 monitors, most of which are intended to measure potential high pollutant values. Shasta County is designated as nonattainment for the State ozone standard as well as the State PM10 standard. Shasta County currently is designated attainment for the State PM2.5 standard. However, the continuous PM2.5 monitor is needed for agricultural burn forecasting and general purposes.

Shasta County had a 2009 federal 8-hour ozone design value of 0.76 ppm and exceeded federal and State ozone standards more than five days in 2009. The Anderson and Redding sites are critical for determining compliance with State and federal ozone standards. The Lassen site is operated by the National Park Service and provides useful data for evaluating transport and background ozone concentrations.

Sacramento Valley Air Basin: Shasta County							
	O_3	**CO**	**NO_2**	**$PM_{2.5}$**	**PM_{10}**	**cont. $PM_{2.5}$**	**cont. PM_{10}**
Anderson (060890007)	Hconc, StateD				Hconc	StateD, Gnrl	
Lassen Volcanic NP (060893003)	Rconc						
Redding (060890004)	Hconc, StateD			Hconc	Hconc		
Shasta Lake (060890008)					Rconc		

Colusa, Glenn and Tehama counties

These counties have a mix of particulate matter and ozone monitors, most are designed to monitor potential high concentrations. However, the Colusa and Willows' continuous PM2.5 monitors help inform agricultural burning decisions, which are important considering that this area has a significant amount of agricultural land. None of these counties are currently designated nonattainment for the federal ozone or PM2.5 standards. The area's 2009 federal 8-hour ozone design values range from 0.062 ppm to 0.082 ppm, which is within the range proposed by U.S. EPA for the revised 8-hour federal ozone standard. Moreover, this area is currently nonattainment for the State 24-hour PM10 standard. Continued ozone and PM monitoring is needed for determining compliance with State and federal standards, as well as agriculture burn forecasting.

Sacramento Valley Air Basin: Colusa, Glenn and Tehama Counties							
	Ozone	**CO**	**NO2**	**PM2.5**	**PM10**	**cont. PM2.5**	**cont. PM10**
Colusa (060111002)	Rconc, StateD			Hconc	Hconc	StateD, AgBn	
Red Bluff-Messer Drive (061030002)					Hconc		
Red Bluff-Oak Street (061030005)	Hconc, StateD						
Tuscan Butte (061030004)	Hconc, Trans, StateD						
Willows (060210003)	Hconc, StateD				Hconc	StateD, AgBn	

Butte County

Butte County is currently designated nonattainment for the federal 1997 ozone standard and a portion of Butte County is nonattainment for the federal 2006 24-hour PM2.5 standard. The county had a 2009 federal 24-hour PM2.5 design value of 59 ug/m^3. The Paradise-Airport site is the ozone design site with a 2009 federal 8-hour design value of 0.082 ppm. With air quality challenges for both pollutants, multi-pollutant monitoring is needed at the Chico site. PM2.5 monitors at the Gridley and Paradise – Fire Station sites also help inform agricultural burning decisions, which is important in this region, as well as characterizing impacts from residential wood burning. Butte County is currently nonattainment for the State 24-hour PM10 standard. Continued monitoring in Butte County is needed.

Sacramento Valley Air Basin: Butte County							
	O_3	**CO**	**NO_2**	**$PM_{2.5}$**	**PM_{10}**	**cont. $PM_{2.5}$**	**cont. PM_{10}**
Chico (060070002)	Hconc	Rconc	Rconc	Hconc	Hconc	StateD, Gnrl	
Gridley (060007004)						StateD, AgBn	
Paradise-Airport (060074001)	Hconc						
Paradise-Fire Station (060072001)						StateD, AgBn	

Sutter and Yuba counties

Both counties are designated nonattainment for the State ozone standard. In addition, a portion of Sutter County is part of the Sacramento federal ozone nonattainment area. Sutter County had a 2009 8-hour ozone design value of 0.079 ppm, which is above the federal 8-hour ozone standard. In addition, portions of Sutter and Yuba counties comprise their own nonattainment area for the federal 24-hour PM2.5 standard. While this area currently meets this standard, PM2.5 monitoring is needed to demonstrate continued attainment. Both ozone and particulate matter monitoring in this area is very important.

Yuba City, located in Sutter County, and Marysville, located in Yuba County, are adjacent to one another, form one combined metropolitan statistical area, and function more like one city than two. Consequently, although there is no monitor physically in Yuba County, the Yuba City site in Sutter County is considered representative of both Yuba City and Marysville, and therefore functions to represent Yuba County, as well. The Sutter Buttes site was established to characterize ozone transport aloft in the Sacramento Valley. This area is currently nonattainment for the State 24-hour PM10 standard. Continued monitoring at the Sutter Buttes and Yuba City sites is needed.

Sacramento Valley Air Basin: Sutter and Yuba Counties							
	Ozone	**CO**	**NO2**	**PM2.5**	**PM10**	**cont. PM2.5**	**cont. PM10**
Sutter Buttes (061010004)	Hconc, Trans						
Yuba City (061010003)	Hconc, StateD		Rconc	Hconc	Hconc	StateD, AgBn	

Yolo County and portions of Placer and Solano counties

All of these counties are nonattainment for the federal and State ozone standards. Solano and Yolo counties have monitors with 2009 federal 8-hour ozone design values exceeding 0.070 ppm. In addition, Yolo County and the Sacramento Valley portions of Placer and Solano counties are all part of the Sacramento federal ozone nonattainment area. Additionally, portions of Yolo and Solano counties and the Sacramento Valley portion of Placer are part of the Sacramento nonattainment area for the State 24-hour PM2.5 and PM10 standards. With multiple air quality challenges, a comprehensive monitoring strategy is important for these areas. Consequently, four out of the seven monitor sites in this area monitor for two or more pollutants. As standards tighten and become more stringent, continued monitoring in these counties becomes even more important. Moreover, with agricultural lands being the predominate land use in and around these counties, monitoring PM2.5 for purposes of agricultural burning forecasts is also important.

Sacramento Valley Air Basin: Yolo County, part of Placer County, and northern and eastern parts of Solano County							
	O_3	**CO**	**NO_2**	**$PM_{2.5}$**	**PM_{10}**	**cont. $PM_{2.5}$**	**cont. PM_{10}**
Auburn (060610002)	Hconc						
Davis-UCD Campus (061130004)	Hconc		Rconc		Rconc	StateD, AgBn	
Roseville (060610006)	Hconc		Rconc	Rconc	Hconc	StateD, AgBn	
West Sacramento (061132001)					Hconc		
Woodland (061131003)	Hconc, StateD			Hconc	Hconc	StateD, AgBn	
Vacaville-Merchant (060953001)					Rconc		
Vacaville-Ulatis (060953003)	Hconc, Trans, StateD					StateD, Gnrl	

Summary

California has one of the most extensive monitoring networks in the nation. Such a network is needed due to our severe air quality issues, large population and vehicle miles traveled, varied topography and a large number of separate airsheds. There are more than 250 monitoring locations in California where the ambient air quality is routinely measured for gaseous and particulate air pollutants. The measured data form a backbone for air quality management programs, provide the public with information on the status of air quality and progress in improving air quality, and are used by health researchers, business interests, environmental groups, and others. As a result of this assessment, all existing monitors covered in this report are critical and none is proposed to be discontinued or relocated. Moreover, this assessment demonstrates that the monitors and sites within this report meet the monitoring objective requirements of Appendix D in 40 CFR 58, which is to provide air pollution data to the general public in a timely manner and to support compliance with ambient air quality standards and air pollution research studies.

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This appendix provides a summary of the required and existing monitoring sites within the geographical scope of this report.

APPENDIX A

Numbers of Required and Existing Sites in the Geographical Areas of this Report[1]

Geographical Area/*MSA*	Pop.	Ozone		PM2.5				PM10			
		Required	Existing	Required FRM	Existing FRM	Required Continuous	Existing Continuous	Required FRM	Existing FRM	Required Continuous	Existing Continuous
Lake County Air Basin	67,530	0	1	0	1	0	0	0	1	0	0
Lake Tahoe Air Basin (portions of El Dorado and Placer counties)	58,121	0	1	0	0	0	0	0	0	0	1
*Sacramento-Arden-Arcade-Roseville MSA**		2	16	3	5	2	6	4	9	0	3
Eastern Kern Air Pollution Control District (a portion of Mojave Desert Air Basin)	147,758	0	1	0	2	0	0	0	3	0	0
*Bakersfield MSA**		2	9	2	5	1	3	2	6	0	1
Mountain Counties Air Basin	472,991	0	11	0	5	0	6	0	3	0	0
*Sacramento-Arden-Arcade-Roseville MSA**		2	16	3	5	2	6	4	9	0	3
Mendocino County and Northern Sonoma Air Quality Management Districts	333,829	0	2	0	0	0	2	0	3	0	1
*Santa Rosa-Petaluma MSA**		1	2	0	1	0	0	0	3	0	0
Northeast Plateau Air Basin	92,112	0	1	0	1	0	0	0	3	0	0
Sacramento Valley Air Basin (minus Sacramento Metro AQMD)	2,817,815	0	16	0	6	0	11	0	13	0	0
Chico MSA		1	2	1	1	1	3	0	1	0	0
Redding MSA		1	3	0	1	0	0	0	3	0	0
*Sacramento-Arden-Arcade-Roseville MSA**		2	16	3	5	2	6	4	9	0	3
*Vallejo-Fairfield MSA**		2	4	1	1	1	2	0	2	0	0
Yuba City MSA		1	2	1	1	1	1	0	1	0	0

[1] Federal minimum monitoring requirements for an area is by Metropolitan Statiscal Area (MSA). However, for the purpose of this assessment, we are listing the number of required and existing monitoring sites by the geographical areas that are covered in this report. Note that there are more monitoring sites in the geographical scope of this report than required by federal regulations. New federal monitoring requirements for NO2 and SO2 will be discussed in future annual monitoring network plans. There are no federal requirements for CO and lead monitoring within the geographical scope of this report.

* Parts of these MSAs are included in the geographical scope of this report, and parts are within the geographical scope of the reports being completed by the districts. The numbers of sites listed are for the entire MSA.